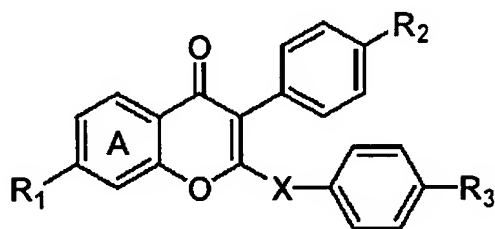


**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Claim 1 (currently amended): A compound of formula A:

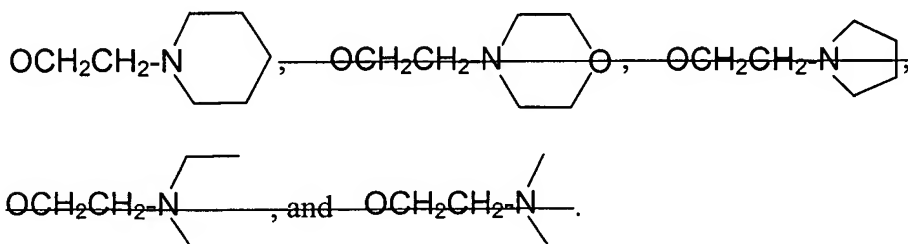


wherein

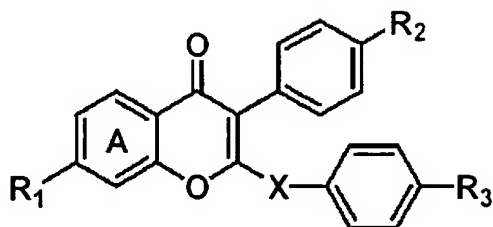
X is selected from the group consisting of O, N, S, SO, and SO<sub>2</sub>;

R<sub>1</sub> and R<sub>2</sub> can be the same or different and are selected from the group consisting of H, OH, OCH<sub>3</sub>, OCH<sub>2</sub>CH<sub>3</sub>, OCH<sub>2</sub>C<sub>6</sub>H<sub>5</sub>, NH<sub>2</sub>, NHCH<sub>3</sub>, N(CH<sub>3</sub>)<sub>2</sub>, CN, CH<sub>3</sub>, CH<sub>2</sub>CH<sub>3</sub>, CH<sub>2</sub>CH<sub>2</sub>CH<sub>3</sub>, CH(CH<sub>3</sub>)<sub>2</sub>, C(CH<sub>3</sub>)<sub>3</sub>, NO<sub>2</sub>, F, Cl, Br, CF<sub>3</sub>, SH, SCH<sub>3</sub>, SCH<sub>2</sub>CH<sub>3</sub>, OCOCH<sub>3</sub>, OCOC(CH<sub>3</sub>)<sub>3</sub>, and OCOCH<sub>2</sub>COOH;

~~R<sub>3</sub> is selected from the group consisting of H, OH, OCH<sub>3</sub>, OCH<sub>2</sub>CH<sub>3</sub>, NH<sub>2</sub>, NHCH<sub>3</sub>, N(CH<sub>3</sub>)<sub>2</sub>, NO<sub>2</sub>, CN, CH<sub>3</sub>, CH<sub>2</sub>CH<sub>3</sub>, CH<sub>2</sub>CH<sub>2</sub>CH<sub>3</sub>, CH(CH<sub>3</sub>)<sub>2</sub>, C(CH<sub>3</sub>)<sub>3</sub>, F, Cl, Br, CF<sub>3</sub>, SH, SCH<sub>3</sub>, SCH<sub>2</sub>CH<sub>3</sub>;~~



Claim 2 (currently amended): ~~The compound of claim 1, wherein~~ A compound of formula A:



wherein

X is selected from S, N, and O;

~~R<sub>1</sub> is selected from OH, OCH<sub>3</sub>, and OC<sub>6</sub>H<sub>5</sub>;~~

~~R<sub>2</sub> is selected from H, OH, CH<sub>3</sub>, and OCH<sub>3</sub>; and~~

R<sub>1</sub> and R<sub>2</sub> can be the same or different and are selected from the group consisting of H, OH, OCH<sub>3</sub>, OCH<sub>2</sub>CH<sub>3</sub>, OCH<sub>2</sub>C<sub>6</sub>H<sub>5</sub>, NH<sub>2</sub>, NHCH<sub>3</sub>, N(CH<sub>3</sub>)<sub>2</sub>, CN, CH<sub>3</sub>, CH<sub>2</sub>CH<sub>3</sub>, CH<sub>2</sub>CH<sub>2</sub>CH<sub>3</sub>, CH(CH<sub>3</sub>)<sub>2</sub>, C(CH<sub>3</sub>)<sub>3</sub>, NO<sub>2</sub>, F, Cl, Br, CF<sub>3</sub>, SH, SCH<sub>3</sub>, SCH<sub>2</sub>CH<sub>3</sub>, OCOCH<sub>3</sub>, OCOC(CH<sub>3</sub>)<sub>3</sub>, and OCOCH<sub>2</sub>COOH; and

~~R<sub>3</sub> is selected from OH and 2-(1-piperidiny)ethoxy.~~

Claim 3 (original): The compound of claim 2, wherein X is S, R<sub>1</sub> is OH, R<sub>2</sub> is OCH<sub>3</sub>, and R<sub>3</sub> is 2-(1-piperidiny)ethoxy.

Claims 4 and 5 (canceled)

Claim 6 (original): The compound of claim 2, wherein X is S, R<sub>1</sub> is OC<sub>6</sub>H<sub>5</sub>, R<sub>2</sub> is OCH<sub>3</sub>, and R<sub>3</sub> is 2-(1-piperidiny)ethoxy.

Claim 7 (original): The compound of claim 2, wherein X is O, R<sub>1</sub> is OC<sub>6</sub>H<sub>5</sub>, R<sub>2</sub> is OCH<sub>3</sub>, and R<sub>3</sub> is 2-(1-piperidiny)ethoxy.

Claim 8 (original): The compound of claim 2, wherein X is O, R<sub>1</sub> is OH, R<sub>2</sub> is OCH<sub>3</sub>, and R<sub>3</sub> is 2-(1-piperidiny)ethoxy.

Claim 9 (original): A one-pot method for preparing a 2-(alkylthio)isoflavone comprising the steps of:

- a. providing a mixture of a deoxybenzoin, carbon disulfide, alkyl halide, and tetrabutylammonium hydrogensulfate;
- b. adding aqueous sodium hydroxide to the mixture while stirring;
- c. reacting the mixture until the 2-(alkylthio)isoflavone is formed.

Claim 10 (original): The method of claim 9 wherein the mixture is allowed to stir for about 3 to about 7 hours after the addition of the sodium hydroxide.

Claim 11 (original): The method of claim 9 further comprising the step of separating the 2-(alkylthio)isoflavone from the reaction mixture.

Claim 12 (original): The method of claim 11 further comprising the step of purifying the 2-(alkylthio)isoflavone compound.

Claim 13 (original): A method of preparing a 2-heterosubstituted 3-aryl-4H-benzopyran-4-one compound comprising the steps of:

- a. selecting a 2-(alkylthio)isoflavone;
- b. optionally protecting potentially reactive groups on the 2-(alkylthio)isoflavone;
- c. oxidizing the alkylthio group to a alkylsulfonyl group; and
- d. substituting the alkylsulfonyl group with a heteroalkyl or heteroaryl group to form the 2-heterosubstituted 3-aryl-4H-benzopyran-4-one compound.

Claim 14 (original): The method of claim 13 wherein the oxidation step is carried out using *m*CPBA in a polar aprotic solvent under reflux conditions.

Claim 15 (original): The method of claim 15 wherein the polar aprotic solvent is CH<sub>2</sub>Cl<sub>2</sub>.

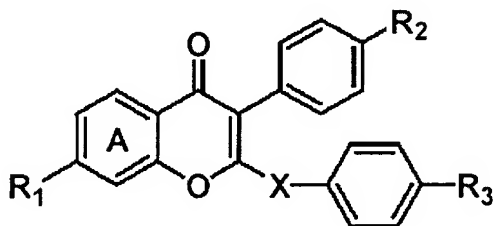
Claim 16 (original): The method of claim 13 wherein alkylsulfonyl group is substituted with a thioaryl group.

Claim 17 (original): The method of claim 16 further comprising the step of substituting the thioaryl group with an ethylpiperidinyl group to form a 4-[2-(1-piperidinyl)ethoxy]thiophenyl group at the 2-position of the 2-heterosubstituted 3-aryl-4H-benzopyran-4-one compound.

Claim 18 (original): The method of claim 17 further comprising the step of deprotecting the 2-heterosubstituted 3-aryl-4H-benzopyran-4-one.

Claim 19 (original): The method of claim 13 further comprising the step of deprotecting the 2-heterosubstituted 3-aryl-4H-benzopyran-4-one.

Claim 20 (currently amended): A method for treating, inhibiting, or delaying the onset of a cancer in a subject in need of such treatment; the method comprising administering a therapeutically effective amount of compound A:

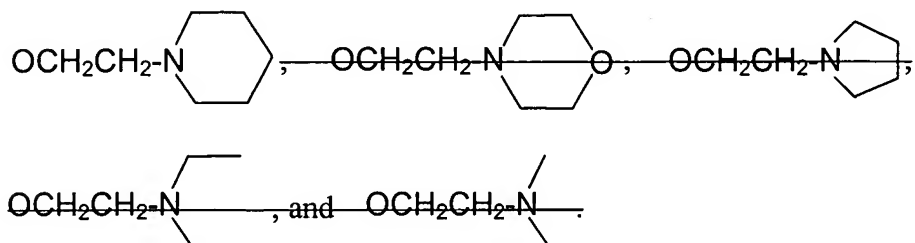


wherein

X is selected from the group consisting of O, N, S, SO, and SO<sub>2</sub>;

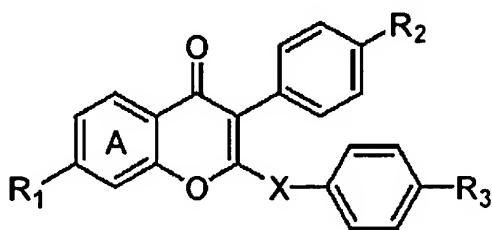
R<sub>1</sub> and R<sub>2</sub> can be the same or different and are selected from the group consisting of H, OH, OCH<sub>3</sub>, OCH<sub>2</sub>CH<sub>3</sub>, OCH<sub>2</sub>C<sub>6</sub>H<sub>5</sub>, NH<sub>2</sub>, NHCH<sub>3</sub>, N(CH<sub>3</sub>)<sub>2</sub>, CN, CH<sub>3</sub>, CH<sub>2</sub>CH<sub>3</sub>, CH<sub>2</sub>CH<sub>2</sub>CH<sub>3</sub>, CH(CH<sub>3</sub>)<sub>2</sub>, C(CH<sub>3</sub>)<sub>3</sub>, NO<sub>2</sub>, F, Cl, Br, CF<sub>3</sub>, SH, SCH<sub>3</sub>, SCH<sub>2</sub>CH<sub>3</sub>, OCOCH<sub>3</sub>, OCOC(CH<sub>3</sub>)<sub>3</sub>, and OCOCH<sub>2</sub>COOH; and

~~R<sub>3</sub> is selected from the group consisting of H, OH, OCH<sub>3</sub>, OCH<sub>2</sub>CH<sub>3</sub>, NH<sub>2</sub>, NHCH<sub>3</sub>, N(CH<sub>3</sub>)<sub>2</sub>, NO<sub>2</sub>, CN, CH<sub>3</sub>, CH<sub>2</sub>CH<sub>3</sub>, CH<sub>2</sub>CH<sub>2</sub>CH<sub>3</sub>, CH(CH<sub>3</sub>)<sub>2</sub>, C(CH<sub>3</sub>)<sub>3</sub>, F, Cl, Br, CF<sub>3</sub>, SH, SCH<sub>3</sub>, SCH<sub>2</sub>CH<sub>3</sub>,~~



to the subject in need of such treatment.

Claim 21 (currently amended): ~~The method of claim 20 wherein the cancer is breast cancer~~ A method for treating, inhibiting, or delaying the onset of a breast cancer in a subject in need of such treatment; the method comprising administering a therapeutically effective amount of compound A:



wherein

X is selected from the group consisting of O, N, S, SO, and SO<sub>2</sub>;

R<sub>1</sub> and R<sub>2</sub> can be the same or different and are selected from the group consisting of H, OH, OCH<sub>3</sub>, OCH<sub>2</sub>CH<sub>3</sub>, OCH<sub>2</sub>C<sub>6</sub>H<sub>5</sub>, NH<sub>2</sub>, NHCH<sub>3</sub>, N(CH<sub>3</sub>)<sub>2</sub>, CN, CH<sub>3</sub>, CH<sub>2</sub>CH<sub>3</sub>, CH<sub>2</sub>CH<sub>2</sub>CH<sub>3</sub>, CH(CH<sub>3</sub>)<sub>2</sub>, C(CH<sub>3</sub>)<sub>3</sub>, NO<sub>2</sub>, F, Cl, Br, CF<sub>3</sub>, SH, SCH<sub>3</sub>, SCH<sub>2</sub>CH<sub>3</sub>, OCOCH<sub>3</sub>, OCOC(CH<sub>3</sub>)<sub>3</sub>, and OCOCH<sub>2</sub>COOH; and

R<sub>3</sub> is 2-(1-piperidinyl)ethoxy

to the subject in need of such treatment.

Claim 22 (currently amended): The method of claim ~~20~~ 21 wherein the cancer is hormone-dependent breast cancer.

Claim 23 (canceled)

Claim 24 (new): The compound of claim 2 wherein

X is selected from S and O;

R<sub>1</sub> is selected from OH, OCH<sub>3</sub>, and OC<sub>6</sub>H<sub>5</sub>;

R<sub>2</sub> is selected from H, OH, CH<sub>3</sub>, and OCH<sub>3</sub>; and

R<sub>3</sub> is 2-(1-piperidinyloxy).